

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) Work device (1) comprising:
 - a work box (Bo) provided with means (o, s) for introducing a liquid of interest (E) into the box and for extracting the liquid of interest from the box,
 - a substrate (S) comprising an active surface that is substantially non-wetting for said liquid of interest contained in said box,
 - a plurality of distinct work zones (Zt) formed on said active surface and each surrounded by a border (b) formed on said active surface that is substantially non-wetting for the liquid of interest, the borders not touching one another and having no common edge,

in which the means (o, s) for introducing and extracting the liquid of interest respectively into and from the box are arranged on said work box in such a way that when the liquid of interest is introduced into the box (BO), the liquid of interest covers the work zones and their respective border, and

in which the borders have a geometry such that when the liquid of interest is extracted from the box, after having been introduced therein, a drop (g) of the liquid of interest (E) remains imprisoned by each border (b) and in contact with the work zone (Zt) that the border (b) surrounds, and the borders are structures in relief.
2. (Original) Device according to claim 1, in which the, at least one, work zone is in the same plane as the active surface.
3. (Previously Presented) Device according to claim 1, in which the, at least one, work zone is a zone of electrical and/or chemical interaction with the drop captured by its border.
4. (Original) Device according to claim 3, in which the, at least one, work zone is an electrochemical microcell.

5. (Original) Device according to claim 1, in which the, at least one, work zone is a sensor selected from the group consisting of an optical, electrical, magnetic, electrostatic, mechanical, thermal or chemical sensor.

6. (Original) Device according to claim 1, in which the, at least one, work zone is an actuator selected from the group consisting of an optical, electrical, magnetic, electrostatic, mechanical, thermal or chemical actuator.

7. (Previously Presented) Device according to claim 1, in which the, at least one, work zone is a zone for detecting at least one chemical or biological species that may be present in the drop of liquid of interest when it is captured.

8. (Original) Device according to claim 7, in which the, at least one, work zone is a zone functionalized by a probe for interacting with a target that may be present in the drop of liquid of interest when it is captured.

9. (Original) Device according to claim 8, in which the probe is selected from the group consisting of an enzyme, an enzyme substrate, an oligonucleotide, an oligonucleoside, a protein, a membrane receptor of a eukaryotic or prokaryotic cell, an antibody, an antigen, a hormone, a metabolite of a living organism, a toxin of a living organism, a polynucleotide, a polynucleoside and a complementary DNA.

10. (Original) Device according to claim 1, in which the, at least one, work zone is a zone that is non-wetting for the liquid of interest.

11. (Original) Device according to claim 1, in which the substrate consists of a material selected from the group consisting of silicon, silicon dioxide, silicon nitride, glass, an organic polymer, plastic, tin, and a metal.

12. (Original) Device according to claim 11, in which the organic polymer is selected from the group comprising polycarbonates, polydimethylsiloxanes, polymethyl methacrylates, polychlorobiphenyls and cycloolefin copolymers.

13. (Original) Device according to claim 11, in which the metal is selected from the group consisting of Au, Ti, Pt, Al, Ni, and the metal alloy is stainless steel.

14. (Original) Device according to claim 1, in which the borders have a shape around the work zone and viewed from above, that is selected from an annular, a star, a rectangle, a square, a triangular, an elliptical shape, or a polygon having 4 to 20 sides.

15. (Original) Device according to claim 1, in which the borders have a cross section, in the direction from the active surface to the upper part of the border, selected from a triangular, rectangular, conical, frustoconical, semi circular or semi-elliptical shape.

16. (Previously Presented) Work device according to claim 1, in which an uppermost part of the border is wetting for the liquid of interest and/or on a slope of the border opposite the work zone that the board surrounds is wetting for the liquid of interest.

17. (Original) Device according to claim 1, in which the borders are obtained by stamping or moulding of the active surface.

18. (Previously Presented) Work device according to claim 1, in which the means for introducing the liquid of interest into the box comprise a pump for injecting the liquid of interest into the box.

19. (Previously Presented) Work device according claim 1, in which the means for extracting the liquid of interest from the box comprise a pump for extracting the liquid of interest from the box.

20. (Original) Device according to claim 19, in which the pump for extracting the liquid of interest from the box is in the form of a pump for injecting a gaseous fluid into the box, via a

first opening formed in the box, so as to be able to inject into the box a gaseous fluid expelling the liquid of interest from the box via a second opening formed in the box.

21. (Original) Device according to claim 20, in which the gaseous fluid injection pump comprises a device for saturating the gaseous fluid injected with vapour of the liquid of interest.

22. (Original) Device according to claim 19, in which the pump for extracting the liquid of interest from the box is in the form of a suction pump arranged at one opening formed in the box so as to be able to extract the liquid of interest from the box by sucking it out via this opening.

23-24. (Canceled)

25. (Original) Biological chip according to claim 24, said chip being selected from the group consisting of nucleic acid chips, antibody chips, antigen chips, protein chips and cell chips.

26. (Withdrawn) Method for producing a device according to claim 1, said method comprising the following steps: supplying a substrate, forming work zones on said substrate, structuring the substrate surface so as to form a border around the work zones, treating the surface on which the work zones and their border have been formed so as to make it substantially non-wetting for the liquid of interest, supplying a box and introducing therein the substrate comprising the work zones surrounded by their border, said box comprising means for introducing the liquid of interest into the box and means for extracting the liquid of interest from the box, and closing said box.

27. (Withdrawn) Production method according to claim 26, in which the borders are formed on the active surface by direct etching of said active surface.

28. (Withdrawn) Production method according to claim 26, in which the borders are formed on the active surface by deposition of a material on said active surface followed by etching or photolithography of said material.

29. (Withdrawn) Production method according to claim 28, in which the material deposited is selected from the group consisting of a resin, a photoresist, organic polymers, metals, Si, oxidized Si, and Si nitride.

30. (Withdrawn) Production method according to claim 28, in which the deposition of a material on said active surface to form the borders is carried out using a method selected from coating, evaporation, spraying and electroplating.

31. (Withdrawn) Production method according to claim 28, in which, the material being photosensitive, the borders are made by photolithography.

32. (Withdrawn) Production method according to claim 26, in which the borders are obtained by stamping or moulding of the active surface.

33. (New) Work device (1) comprising:

- a work box (Bo) provided with means (o, s) for introducing a liquid of interest (E) into the box and for extracting the liquid of interest from the box,
- a substrate (S) comprising an active surface that is substantially non-wetting for said liquid of interest contained in said box,
- a plurality of distinct work zones (Zt) formed on said active surface and each surrounded by a border (b) formed on said active surface that is substantially non-wetting for the liquid of interest, the borders not touching one another and having no common edge,

in which the means (o, s) for introducing and extracting the liquid of interest respectively into and from the box are arranged on said work box in such a way that when the liquid of interest is introduced into the box (BO), the liquid of interest covers the work zones and their respective border, and

in which the borders have a geometry such that when the liquid of interest is extracted from the box, after having been introduced therein, a drop (g) of the liquid of interest (E) remains imprisoned by each border (b) and in contact with the work zone (Zt) that the border (b) surrounds, and the borders are structures in relief presenting a height above the active surface between 5 and 20 μm .